

What is claimed is:

1. A separation media, comprising:

a polymer characterized by one of the following formulas:

$((A)-(B))_n-A_m$ Formula 1;

$(A)-(B)_{n'}$ Formula 2;

$(B)-(A)_{n'}$ Formula 3;

wherein n is at least 1; and m is 0 or 1; n' is at least 1;

A represents a polymeric segment prepared from one or more monomers

selected from the group consisting of acrylamide, methacrylamide, N-

alkylacrylamide, N-alkylmethacrylamide, N,N-dialkylacrylamide, N,N-

dialkylmethacrylamide, N-methylolmethacrylamide, N-ethylolmethacrylamide, N-

methylolacrylamide, N-ethylolacrylamide, hydroxyethylcellulose,

hydropropylcellulose, and polyethylene oxide;

B represents a polymeric segment prepared from one or more monomers

selected from the group consisting N,N-dialkylacrylamide, ethyleneoxide,

propyleneoxide, N-vinyl pyrrolidone, vinyl alcohol, allyl glycidyl ether, and

combinations thereof; and

A is prepared from at least one monomer that is different from at least one

monomer in B.

2. The separation media of claim 1, further comprising least one other polymer in sufficient quantity to cause sieving of a biological molecule.

3. The separation media of claim 1 further comprising at least one other polymer in sufficient quantity to cause wall coating of an uncoated capillary during a capillary electrophoresis experiment.

4. The separation media of claim 1 further comprising a sieving polymer.

5. The separation media of claim 1 further comprising a wall coating polymer.

6. The separation media of claim 1 further comprising a sieving polymer and a wall coating polymer.

7. The separation media of either of claims 4 or 6, wherein the sieving polymer

2 is made from the same monomer or monomers as polymeric segment A.

1 8. The separation media of either of claims 5 or 6, wherein the wall coating
2 polymer is made from the same monomer or monomers as polymeric segment B.

1 9. The separation medium of claim 7, wherein the sieving polymer is a linear
2 polyacrylamide.

1 10. The separation media of claim 1, wherein said polymer is a di-block
2 copolymer of Formula 1.

1 11. The separation media of claim 10, wherein segment A is prepared one or
2 more monomers including at least N,N-dimethylacrylamide and segment B is
3 prepared one or more monomers including at least acrylamide.

1 12. A capillary filled with an electrophoresis separation medium comprising:
2 about 0.01 % to about 5 % w/w of a polymer characterized by one of the
3 following formulas:

4 $((A)-(B))_n-A_m$ Formula 1;

5 $(A)-(B)_{n'}$ Formula 2;

6 $(B)-(A)_{n'}$ Formula 3;

7 wherein n is at least 1; and m is 0 or 1; n' is at least 1;

8 A represents a polymeric segment prepared from one or more monomers
9 selected from the group consisting of acrylamide, methacrylamide, N-
10 alkylacrylamide, N-alkylmethacrylamide, N,N-dialkylacrylamide, N,N-
11 dialkylmethacrylamide, N-methylolmethacrylamide, N-ethylolmethacrylamide, N-
12 methylolacrylamide, N-ethylolacrylamide, hydroxyethylcellulose,
13 hydropropylcellulose, and polyethylene oxide;

14 B represents a polymeric segment prepared from one or more monomers
15 selected from the group consisting N,N-dialkylacrylamide, ethyleneoxide,
16 propyleneoxide, N-vinyl pyrrolidone, vinyl alcohol, allyl glycidyl ether, and
17 combinations thereof; and

18 A is prepared from at least one monomer that is different from at least one
19 monomer in B.

- 1 13. A method of separating a mixture of biological molecules in a capillary
- 2 electrophoretic experiment with a separation media as defined in claim 1.